

# PATENT ABSTRACTS OF JAPAN

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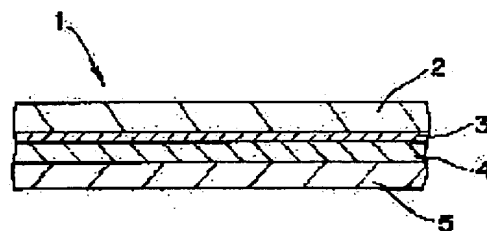
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## (54) COVER MATERIAL

(57)Abstract:

**PURPOSE:** To obtain a cover material having superior electrostatic characteristics and transparency, a high adhesion to a synthetic resin-made container, and also a good releasability therefrom and never blocking even when it is wound in a reeled state.

**CONSTITUTION:** A cover material 1 is provided with a biaxially oriented resin layer 2 made of a resin other than a polyester resin and a heat sealant layer in which conductive fine powder containing a barium sulfate as a main agent is dispersed in a thermoplastic resin that is a polyester resin. An intermediate layer 4 provided between the biaxially oriented resin layer and the heat sealant layer adjacently to the heat sealant layer is made of a resin composition composed of 30-70wt.% ethylene- $\alpha$ -olefin copolymer having a density of 0.915-0.940g/cm<sup>3</sup> and 70-30wt.% styrene-butadiene block copolymer of 50-90wt.% styrene and 50-10wt.% butadiene.



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**CLAIMS**

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**[Claim(s)]**

[Claim 1] It has a biaxial-stretching resin layer, a heat sealant layer, and the interlayer that adjoins this heat sealant layer and is located between said biaxial-stretching resin layer and said heat sealant layer. Said biaxial-stretching resin layer consists of resin other than polyester resin, and said heat sealant layer is a layer in which the conductive impalpable powder which uses a barium sulfate as base resin was distributed by the thermoplastics which is polyester resin. Said middle class is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. 30 - 70 % of the weight of ethylene-alpha olefin copolymers, Lid material characterized by being formed with the resin constituent which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers.

[Claim 2] Said polyester resin which forms said heat sealant layer is lid material according to claim 1 characterized by glass transition temperature being a thing 55 degrees C or more.

[Claim 3] The weight ratio of said conductivity impalpable powder in which said heat sealant layer is constituted, and said thermoplastics is lid material given in either of claims 1 or 2 characterized by being within the limits of 1:10-5:2.

[Claim 4] Said heat sealant layer is lid material according to claim 1 to 3 characterized by for surface resistivity being within the limits which is 10<sup>5</sup>-10<sup>12</sup>ohms, and the charge damping time being 2 or less seconds.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the lid material which starts lid material, especially is used for the container made of synthetic resin.

[0002]

[Description of the Prior Art] Conventionally, various components, solid or liquefied food, etc. are held in the container made of synthetic resin, and sealing by lid material, circulating and keeping opening is performed.

[0003] For example, electronic parts are contained in each embossing section of the carrier tape on which much embossing was formed, and embossing carrier mold taping which carried out thermal melting arrival and sealed lid material (covering tape) on the carrier tape so that the embossing section might be covered is used. The carrier tape used for such embossing carrier mold taping is usually formed using the ingredient with easy sheet forming, such as a polyvinyl chloride, polystyrene, polyester, and a polycarbonate. Moreover, lid material is equipped with the heat sealant layer formed in one field of a biaxial-stretching resin film and this film. And a means to prevent this with static electricity which generates static electricity which the electronic parts contained contact the embossing section of a carrier tape or lid material, and generate, and a covering tape in case it exfoliates from a carrier tape since there is a danger that degradation of electronic parts and destruction will arise is required of a carrier tape and lid material.

[0004] As a prevention means of static electricity generating in a carrier tape, a conductive carbon particle and a metal particle are scoured in a carrier tape, or applying is performed. Moreover, as a prevention means of static electricity generating in lid material, antistatic agents, such as a surface active agent, a conductive carbon particle, and a metal particle are scoured in the heat sealant layer which contacts electronic parts and directly, or applying is performed.

[0005]

[Problem(s) to be Solved by the Invention] However, in the above conventional embossing carrier mold taping, a carrier tape and lid material checked the electronic parts with which transparency is very low and is contained by embossing carrier mold taping by the conductive carbon particle as a contained antistatic agent from the outside, and had a problem of \*\*\*\*\*.

[0006] Moreover, when it applied with a surface active agent, the surface state of the heat sealant layer of a covering tape was changed, seal nature became unstable, and there was a problem that do not become the cause of a poor seal, and the stable antistatic effectiveness was not acquired since dependence of the static electricity spreading effect by the temperature under storage and humidity is large.

[0007] Moreover, predetermined reinforcement is required so that lid material may exfoliate and omission of electronic parts may not produce the thermal melting arrival of the lid material to a carrier tape during transportation of embossing carrier mold taping, and storage. However, when this thermal melting arrival reinforcement was too large, there was a problem that the accident on which a carrier tape vibrates and electronic parts jump out of the embossing section of a carrier tape in the case of exfoliation of the lid material in the mounting process of electronic parts occurred.

[0008] Moreover, lid material is a tape configuration which has predetermined width of face, and the thermal melting arrival to a carrier tape is presented with it in the state of a reel. In this reel condition, since the biaxial-stretching resin film and heat sealant layer which constitute lid material touch, blocking generating between both poses a problem. And the lid material which does not have such blocking generating and lid material equipped with sufficient adhesive property to a carrier tape and the opposite property of good detachability is not yet obtained.

[0009] It aims at offering the lid material which blocking does not produce even if a reel condition is rolled round while this invention is made in view of such a situation, and has the outstanding static electricity property and transparency and combines the high adhesive property to the container made of synthetic resin, and good detachability.

[0010]

[Means for Solving the Problem] In order to attain such a purpose, this invention A biaxial-stretching resin layer and a heat sealant layer, It has the interlayer who adjoins this heat sealant layer and is located between said biaxial-stretching resin layer and said heat sealant layer. Said biaxial-stretching resin layer consists of resin other than polyester resin, and said heat sealant layer is a layer in which the conductive impalpable powder which uses a barium sulfate as base resin was distributed by the thermoplastics which is polyester resin. Said middle class is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. 30 - 70 % of the weight of ethylene-alpha olefin copolymers, It considered as a configuration which is formed with the resin constituent which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers.

[0011]

[Function] The biaxial-stretching resin layer which lid material becomes from resin other than polyester resin, and the heat sealant layer in which the conductive impalpable powder which uses a barium sulfate as base resin was distributed by thermoplastics, This heat sealant layer is adjoined, it is located between a biaxial-stretching resin layer and a heat sealant layer, and they are a consistency 0.915 - 0.940 g/cm<sup>3</sup>. 30 - 70 % of the weight of ethylene-alpha olefin copolymers, It has the interlayer formed with the resin constituent which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers. Since the thermoplastics which forms a heat sealant layer is polyester resin, The conductive impalpable powder which uses as base resin the barium sulfate which there is no blocking generating with a biaxial-stretching resin layer, and was contained in the heat sealant layer gives an antistatic property to lid material, without losing the transparency of a heat sealant layer. Since the exfoliation between the layers of an interlayer and a heat sealant layer or exfoliation by the cohesive failure inside a heat sealant layer is still more possible, exfoliation of lid material can be ensured regardless of the thermal melting arrival reinforcement by the heat sealant layer.

[0012]

[Example] Hereafter, it explains, referring to a drawing about the example of this invention.

[0013] Drawing 1 is the outline sectional view of the lid material of this invention. The lid material 1 is equipped with the biaxial-stretching resin layer 2, and the interlayer 4 and the heat sealant layer 5 by which the laminating was carried out to the biaxial-stretching polypropylene resin layer 2 through the glue line 3 at order in drawing 1.

[0014] The biaxial-stretching resin layer 2 is a layer which comes to carry out biaxial stretching of the resin other than polyester resin, and, specifically, can be formed with biaxially oriented films, such as polypropylene resin, Nylon, and polycarbonate resin. By forming such a biaxial-stretching resin layer 2, even if the biaxial-stretching resin layer 2 and the heat sealant layer 5 are stuck by pressure, the lid material 1 being used as a reel condition, it is hard to produce blocking, and thermal resistance can be given to the lid material 1. The thickness of the biaxial-stretching resin layer 2 can be suitably set up according to the purpose of using lid material, for example, can be set to about 6-100 micrometers. In addition, surface treatment, such as corona treatment, plasma treatment, and sandblasting processing, may be beforehand performed to the field in which the glue line 3 of this biaxial-stretching resin layer 2 is formed if needed, and an adhesive property with a glue line 3 may be raised to it.

[0015] A glue line 3 is 3 low density polyethylene and the consistency of 0.915-0.940g/cm. It can form with the adhesives of the polyolefine which are either an ethylene-alpha olefin copolymer, a polyethylene-vinyl acetate copolymer, an ionomer, polypropylene or these denaturation objects, an isocyanate system, and an imine system etc., and about 0.2-60 micrometers of thickness are desirable. a glue line 3 -- a biaxial-stretching resin film top -- spreading or extrusion molding -- it can carry out -- this glue line 3 top -- an interlayer 4 -- a dry lamination -- or an extrusion lamination can be carried out.

[0016] The middle class 4 is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. It is formed with the resin constituent which consists of 30 - 70 % of the weight of ethylene-alpha olefin copolymers, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers. The ethylene-alpha olefin copolymer used for the middle class's 4 formation is a copolymer of ethylene, and a butene, a pentene, a hexene, a heptene, octene and 4-methyl pentene and 1 grade etc. The consistencies of such an ethylene-alpha olefin copolymer are 0.915 g/cm<sup>3</sup>. The following or 0.940g/cm<sup>3</sup>

When exceeding, the membrane formation nature of the interlayer 4 by combination with a styrene-butadiene block copolymer falls and is not desirable.

[0017] Moreover, if the adhesiveness of a film increases that the amount of styrene which constitutes the styrene-butadiene block copolymer used for the middle class's 4 formation is less than 50 % of the weight, and handling becomes difficult and it exceeds 90 % of the weight, adhesion with the heat sealant layer in low temperature worsens and is not desirable.

[0018] And the mixing ratio of the ethylene-alpha olefin copolymer and styrene-butadiene block copolymer in the middle class 4 influences greatly the peel strength at the time of exfoliating, after carrying out thermal melting arrival of the lid material 1 to the container made of synthetic resin, and the transparency of the lid material 1. When a styrene-butadiene block copolymer exceeds [ the amount of ethylene-alpha olefin copolymers ] 70 % of the weight less than 30% of the weight, an interlayer's 4 membrane formation nature becomes low, and the transparency of lid material falls and is not desirable, either. On the other hand, the amount of ethylene-alpha olefin copolymers exceeds 70 % of the weight, when a styrene-butadiene block copolymer is less than 30 % of the weight, the adhesion force of an interlayer 4 and the heat sealant layer 5 is too small, and the peel strength of lid material is not less [ fitness reinforcement ], and desirable.

[0019] An interlayer's 4 thickness usually has desirable about 10-60 micrometers. When an interlayer's thickness is less than 10 micrometers, if membrane formation nature is bad and exceeds 60 micrometers, the thermal melting arrival nature of the lid material 1 will worsen.

[0020] Moreover, for the lid material 1 of this invention, the layer which can make an interlayer 4 multilayer structure and touches the heat sealant layer 5 in this case in order to raise an interlayer's 4 membrane formation precision is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. It needs to be formed from the resin constituent which consists of 30 - 70 % of the weight of ethylene-alpha olefin copolymers, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers.

[0021] Drawing 2 is the outline sectional view showing the example of the lid material of this invention which made the interlayer two-layer structure, and the interlayer 4 consists of 1st resin layer 4a and 2nd resin layer 4b. In this case, 1st resin layer 4a is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. It is formed with an ethylene-alpha olefin copolymer. And 2nd resin layer 4b which touches the heat sealant layer 5 is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. It is formed with the resin constituent which consists of 30 - 70 % of the weight of ethylene-alpha olefin copolymers, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers. Such thickness of 1st resin layer 4a and 2nd resin layer 4b can be set to about 5-30 micrometers, respectively.

[0022] Drawing 3 is the outline sectional view showing the example of the lid material of this invention which made the interlayer the three-tiered structure, and the interlayer 4 consists of 3rd resin layer 4c prepared between 1st resin layer 4a, 2nd resin layer 4b, and 1st resin layer 4a and 2nd resin layer 4b. In this case, 1st resin layer 4a is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. It is formed with an ethylene-alpha olefin copolymer. Moreover, 2nd resin layer 4b which touches the heat sealant layer 5 is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. It is formed with the resin constituent which consists of 30 - 70 % of the weight of ethylene-alpha olefin copolymers, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers. And 3rd resin layer 4c is a layer with the mixed large ratio of an ethylene-alpha olefin copolymer from 2nd resin layer 4b. Thickness of such 1st resin layer 4a, 2nd resin layer 4b, and 3rd resin layer 4c can be set to about 3-20 micrometers, respectively.

[0023] The above interlayers 4 can form with a dry lamination process or an extrusion lamination process.

[0024] In case the lid material 1 by which thermal melting arrival was carried out to the container made of synthetic resin when the lid material 1 of this invention possessed the above interlayers 4 is exfoliated, the exfoliation between the layers of an interlayer 4 and the heat sealant layer 5 or exfoliation by the cohesive failure in the heat sealant layer 5 interior arises. The peel strength in this case is weaker than the thermal melting arrival reinforcement of the heat sealant layer 5 and the container made of synthetic resin which are mentioned later, and it is desirable that it is the range of 100-1200g / 15mm. If peel strength is set to 100g / less than 15mm, in case the container after carrying out thermal melting arrival of the lid material will be transported, the exfoliation between the layers of an interlayer 4 and the heat sealant layer 5 or exfoliation by the cohesive failure in the heat sealant layer 5 interior arises, and there is a danger that contents will drop out. Moreover, it is [ a possibility that the container made of synthetic resin may vibrate and contents may jump out in the case of exfoliation of lid material ] and is not desirable if peel strength exceeds 1200g / 15mm. In addition, the above-mentioned peel strength is the value of 180-degree exfoliation under 23 degrees C and 40%RH ambient atmosphere (exfoliation rate = a part for 300 mm/).

[0025] Therefore, the lid material 1 can exfoliate certainly from the container made of synthetic resin, after it made sufficiently high thermal melting arrival reinforcement to the container made of synthetic resin by the heat sealant layer 5 and it carries out thermal melting arrival.

[0026] It can be suitably chosen by controlling heat-sealing conditions whether the exfoliation between the layers of the above interlayers 4 and the heat sealant layer 5 (interlaminar peeling) is produced here or exfoliation by the cohesive failure in the heat sealant layer 5 is produced. That is, interlaminar peeling of an interlayer 4 and the heat sealant layer 5 can be produced by what the conditions at the time of heat sealing are made severe for (it is high in whenever [stoving temperature], and is long in heating time, and pressurization is strengthened), and exfoliation by the cohesive failure in the heat sealant layer 5 can be produced by making loose the conditions at the time of heat sealing. as the example of the above-mentioned heat-sealing conditions -- the case of interlaminar peeling -- whenever [stoving temperature] -- =140-200 degree C, heating time = 0.5 - 2.0 seconds, and pressurization =1.0 - 5.0 kgf/cm<sup>2</sup> extent -- it is -- the case of cohesive failure -- whenever [stoving temperature] -- =100-150 degree C, heating time = 0.1 - 1.0 seconds, and pressurization =0.5 - 3.0 kgf/cm<sup>2</sup> It is extent.

[0027] The heat sealant layer 5 is a layer in which the conductive impalpable powder which uses a barium sulfate as base resin was distributed by thermoplastics.

[0028] As for the polyester resin to be used, it is desirable that glass transition temperature is a thing 55 degrees C or more. When the heat sealant layer 5 is stuck by pressure with the biaxial-stretching resin layer 2 as the glass transition temperature of polyester resin is less than 55 degrees C, it becomes easy to produce blocking. Moreover, you may correspond by blending two or more sorts of polyester resin with which glass transition temperature differs, and making glass transition temperature of the whole polyester resin system sealant into 55 degrees C or more.

[0029] Such conductive impalpable powder has that desirable whose mean particle diameter of a primary particle is about 0.01-5 micrometers.

[0030] As for the weight ratio of the above conductive impalpable powder and the thermoplastics in the heat sealant layer 5, it is desirable that it is within the limits of 1:10-5:2. If the amount of conductive impalpable powder increases more than the above-mentioned range, transparency and heat-sealing reinforcement will become inadequate. Moreover, if there are few amounts of conductive impalpable powder conversely than the above-mentioned range, the surface resistivity and the charge damping time which peel strength stops satisfying the above-mentioned fitness peel strength (100-1200g / 15mm), and mentions later will be acquired.

[0031] In addition, especially the thickness of the heat sealant layer 5 has the desirable range of 0.8-2 micrometers 0.5-5 micrometers.

[0032] The charge damping time which is within the limits of 105-1012 ohms, and it takes for the surface resistivity to decline 99% from 5000V under 23\*\*5 degrees C and 12\*\*3%RH to the bottom of 22 degrees C and 40%RH is 2 or less seconds, and such a heat sealant layer 5 has the outstanding static electricity property. When the above-mentioned surface low effectiveness exceeds 1012 ohms, the static electricity spreading effect gets extremely bad, and it becomes difficult to protect electronic parts from the static electricity destruction, and it is 105. When it becomes under omega, the electrical and electric equipment may energize from the exterior to electronic parts through lid material, and there is a danger that electronic parts will be destroyed electrically. On the other hand, when the charge damping time which is the standard of the diffusion rate of the charge generated with static electricity exceeds 2 seconds, the static electricity spreading effect gets extremely bad, and it becomes difficult to protect electronic parts from the static electricity destruction. In addition, above-mentioned surface resistivity and the above-mentioned charge damping time can be measured based on MIL-B-81705C which is U.S. Military Standard.

[0033] The heat sealant layer 5 can be made to contain additives, such as a distributed stabilizer, a surface active agent, and an antiblocking agent, if needed.

[0034] Spreading formation of such a heat sealant layer 5 can be carried out on an interlayer 4.

[0035] As for the above lid material of this invention, total light transmission has transparency from which 50% or more and a haze value become 80% or less. Therefore, the container made of synthetic resin is filled up with contents, and after carrying out the lid material 1 thermal melting arrival and sealing it, the existence of contents and a restoration condition can be inspected and checked by viewing.

[0036] And since the exfoliation between the layers of an interlayer 4 and the heat sealant layer 5 or exfoliation by the cohesive failure in the heat sealant layer 5 interior produces the lid material 1 of this invention, it has the detachability ability stabilized without being influenced by the thermal melting arrival conditions to the container made of synthetic resin. Such interlaminar peeling is explained with reference to

drawing 4 thru/or drawing 7 . First, as shown in drawing 4 and drawing 5 , thermal melting arrival of the lid material 1 as shown in the carrier tape 11 equipped with the embossing section 12 at drawing 1 is carried out. This thermal melting arrival is performed to the both ends of the embossing section 12 in the shape of Rhine by predetermined width of face. In the example of illustration, the slash section has shown the Rhine-like thermal melting arrival part H. In this condition, the range of the adhesion reinforcement of the interlayer 4 of the lid material 1 and the heat sealant layer 5 or the disruptive strength of the heat sealant layer 5 is 100-1200g / 15mm, and it is small from the thermal melting arrival reinforcement of the heat sealant layer 5 and the carrier tape 11. Next, in case it exfoliates from the carrier tape 11, when interlaminar peeling of the above-mentioned interlayer 4 and the heat sealant layer 5 produces the lid material 1, as shown in drawing 6 , in the Rhine-like thermal melting arrival part H, thermal melting arrival of the heat sealant layer 5 is carried out to the carrier tape 11, and exfoliation produces it between the layers of an interlayer 4 and the heat sealant layer 5. Therefore, the lid material 1 exfoliates, where the Rhine-like thermal melting arrival part H is left on a carrier tape among the heat sealant layers 5. While thermal melting arrival of a part of heat sealant layer 5 had been carried out to the carrier tape 11 in the Rhine-like thermal melting arrival part H on the other hand as shown in drawing 7 when having exfoliated from the carrier tape 11 and exfoliation by the cohesive failure of the heat sealant layer 5 above-mentioned interior produced the lid material 1, as a part is removed with the lid material 1, exfoliation in the heat sealant layer 5 interior arises. Therefore, regardless of the thermal melting arrival reinforcement of the heat sealant layer 5 and the carrier tape 11, the lid material 1 exfoliates according to the disruptive strength of the heat sealant layer 5. [0037] That is, the lid material 1 of this invention has the opposite property [ say / the high thermal melting arrival nature to the carrier tape 11, and the easy detachability at the time of exfoliation ].

[0038] As a container made of synthetic resin set as the use object of the lid material of above this inventions A polyvinyl chloride (PVC), polystyrene (PS), polyester (A-PET) PEN, PET-G, PCTA, polypropylene (PP), a polycarbonate (PC), Containers made of resin, such as a polyacrylonitrile (PAN) and acrylonitrile-butadiene-styrene copolymer (ABS), Or the impalpable powder made from electric conduction which gave the product made from electric conduction, Si system organic compound, and a surfactant can be scoured as a cure against static electricity to metallic oxides, such as a conductive carbon particle, a metal particle, tin oxide, and a zinc oxide, titanium oxide, or what was applied can be mentioned to these. Moreover, the thing in which the compound sheet plastic which comes to carry out the laminating of PS system, ABS system resin film, or sheet containing carbon black by the co-extrusion in one was formed to one side or both sides of PS system resin sheet or an ABS system resin sheet is also mentioned. Or the thing which made the conductive polymer form in a plastic film front face is mentioned.

[0039] Next, the example of an experiment is shown and the lid material of this invention is further explained to a detail.

(Example of an experiment) The biaxial-stretching polypropylene (PP) film (20 micrometers in the OPP film U-1 made from TOH CELLO Chemistry and thickness, corona treatment article) was prepared as an object for biaxial-stretching resin layers.

[0040] Moreover, the polyethyleneimine solution (product made from NIPPON SHOKUBAI Chemistry P-100) was prepared as adhesives.

[0041] Furthermore, low density polyethylene (LDPE) ( Myra Son 16made from Mitsui Petrochemistry-P) was prepared as an object for glue lines. Extrusion molding was carried out and the glue line with a thickness of 20 micrometers was formed.

[0042] in order [ next, ] to form the middle class -- the following line as an ethylene-alpha olefin copolymer -- the following S-B copolymer was prepared as a low density polyethylene (L-LDPE) and 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block (S-B) copolymer.

[0043] L-LDPE:Mitsui Petrochemical Industries, Ltd. make -- ULTZEX 3550A consistency =0.925 g/cm3 S-B copolymer: -- Asa FREX 810 by Asahi Chemical Industry Co., Ltd. -- in order to form a heat sealant layer, following polyester resin and conductive impalpable powder were prepared again.

[0044] Polyester resin: Toyobo Co., Ltd. make Byron (glass transition temperature = 55 degrees C) Conductive impalpable powder: Mitsui Mining and Smelting Co., Ltd. make Pasto Laon IV mean particle diameter = the interlayer (30 micrometers in thickness) was first formed after applying adhesives to PP film using 0.1 micrometers, next such each ingredient on the mixed conditions of L-LDPE and a S-B copolymer shown in the following table 1 through a LDPE layer (20 micrometers in thickness) by the extrusion lamination process. Then, the heat sealant layer (2 micrometers in thickness) of the presentation shown in the following table 1 was formed by the gravure reversing method on the middle class, and lid material (samples 1-7) was created.

[0045]

[Table 1]

表 1

蓋 材	中 間 層 の 組 成		ヒートシーラント層の組成		
	L・LDPE	S・B 共重合体	ポリエステル 樹脂	塩酢ビ 共重合体	導電性 微粉末
試料 1	4 0	6 0	1 0 0	0	1 0 0
試料 2	4 0	6 0	1 0 0	0	2 0 0
試料 3	4 0	6 0	1 0 0	0	1 0
試料 4	4 0	6 0	1 0 0	0	3 0 0
試料 5	4 0	6 0	1 0 0	0	5
試料 6	8 0	2 0	9 0	1 0	1 0 0
試料 7	2 0	8 0	9 0	1 0	1 0 0

\* 表 1 中の数値は重量部を示す。

\* 塩酢ビ共重合体：塩化ビニル-酢酸ビニル共重合体を示す。

Moreover, glass transition temperature used the following polyester resin which is less than 55 degrees C, and also the sample 8 as well as the sample 1 of the above-mentioned table 1 was created.

[0046] Polyester resin: Toyobo Co., Ltd. make Byron (glass transition temperature = 50 degrees C)

Moreover, the biaxial-stretching polyethylene terephthalate (PET) film (12 micrometers in S pet 6140 by Toyobo Co., Ltd., thickness) was used as a biaxial-stretching resin film, and also the sample 9 as well as the sample 1 of the above-mentioned table 1 was created.

[0047] Furthermore, the following conductive carbon particle was used as conductive impalpable powder, and also the sample 10 as well as the sample 1 of the above-mentioned table 1 was created.

[0048] Conductive carbon particle: Product made from size \*\*\*\*\* Pudding tex XE2 mean particle diameter = total light transmission, surface resistivity, the charge damping time, and blocking resistance were measured on condition that the following whenever [ haze ] about 0.4 micrometers, next each above-mentioned lid material (samples 1-10). Moreover, a heat-sealing bar is used for a conductive polyvinyl chloride resin base material (product made from Peace Chemistry XEG47) for each above-mentioned lid material, and they are 150 degrees C, 0.5 seconds, and 3.0 kgf/cm<sup>2</sup>. Thermal melting arrival was carried out on conditions, and peel strength was measured on condition that the following after that.

(Measuring condition of whenever [ haze ], and total light transmission) It measured in color computer SM [ by Suga Test Instruments Co., Ltd. ]-5SC.

(Measuring condition of surface resistivity) It measured by Huy Lester IP by Mitsubishi Petrochemical Co., Ltd. under 22 degrees C and 40%RH.

(Measuring condition of the charge damping time) The time amount taken to decrease 99% from 5000V under 23\*\*5 degrees C and 12\*\*3%RH is based on MIL-B-81705C, and it is STATIC DECAY METER-406C made from ETS (Electro-Tech Systems, Inc). It measured.

(Measuring condition of peel strength) the bottom of 23 degrees C and 40%RH -- setting -- made in Oriental Baldwin -- tensilon universal testing machine HTH-100 It measured. (Exfoliation rate = part 180-degree exfoliation for 300 mm/)

(Blocking resistance) Lid material with a die length [ of 100m ] and a width of face of 50mm was rolled



round in the shape of a reel, and the blocking generating situation after leaving it under the environment of 40 degrees C and 90%RH for 24 hours was observed.

[0049] The measurement result and exfoliation gestalt of the above-mentioned item about each lid material were shown in the following table 2.

[0050]

[Table 2]

表 2

蓋 材	ヘーズ度 (%)	全光線透 過率(%)	表面抵抗率 ( $\Omega$ )	電荷減 衰時間 (秒)	剥離強度 (g/15mm)	ブロッキング 発生状況	剥離形態
試料 1	6 5	8 8	$10^9$	0. 1	3 0 0	ナ シ	層間剥離
試料 2	7 2	8 4	$10^7$	0. 1	7 0 0	ナ シ	層間剥離
試料 3	5 0	9 2	$10^{12}$	0. 1	1 0 0	ナ シ	層間剥離
試料 4	8 2	8 0	$10^5$	0. 1	9 0 0	ナ シ	層間剥離
試料 5	3 5	9 2	$> 10^{18}$	2. 2	5 0	ナ シ	層間剥離
試料 6	6 0	9 0	$10^9$	0. 1	8 0	ナ シ	層間剥離
試料 7	7 5	8 5	$10^9$	0. 1	1 3 0 0	ナ シ	層間剥離
試料 8	6 5	8 8	$10^9$	0. 1	3 0 0	有 り	層間剥離
試料 9	6 5	8 8	$10^9$	0. 1	3 0 0	有 り	層間剥離
試料10	9 0	2 0	$10^5$	0. 1	1 5 0	ナ シ	層間剥離

\*剥離形態…層間剥離：中間層とヒートシーラント層との界面で剥離が生じ、基材に  
ヒートシーラント層が残る形態。

Moreover, they are the thermal melting arrival conditions of the lid material to a conductive polyvinyl chloride resin base material 140 degrees C, 0.4 seconds, and 1.0 kgf/cm<sup>2</sup> It carried out, and also the peel strength, blocking generating situation, and exfoliation gestalt of each lid material were measured like \*\*\*\*, and it was shown in the following table 3.

[0051]

[Table 3]

表 3

蓋 材	剥離強度 (g/15mm)	ブロッキング 発生状況	剥離形態
試料 1	2 8 0	ナ シ	凝集破壊 1
試料 2	6 6 0	ナ シ	凝集破壊 1
試料 3	1 0 0	ナ シ	凝集破壊 1
試料 4	8 8 0	ナ シ	凝集破壊 1
試料 5	5 0	ナ シ	凝集破壊 1
試料 6	8 0	ナ シ	凝集破壊 1
試料 7	1 3 0 0	ナ シ	凝集破壊 2
試料 8	2 8 0	有 り	凝集破壊 1
試料 9	2 8 0	有 り	凝集破壊 1
試料 10	1 4 0	ナ シ	凝集破壊 1

\* 凝集破壊 1 : ヒートシーラント層内部破壊にて剥離が生じる形態。

\* 凝集破壊 2 : 中間層内部破壊にて剥離が生じる形態。

As shown in Table 2 and 3, samples 1-3 were equipped with good transparency and the static electricity property, and the exfoliation between the layers of an interlayer and a heat sealant layer or the exfoliation by the cohesive failure inside a heat sealant layer produced them in moderate peel strength.

[0052] On the other hand, there were a little many contents of the conductive impalpable powder of a heat sealant layer, since a sample 5 had a little few contents of conductive impalpable powder, the sample 4 had bad transparency, the haze value was conversely high [ the sample ], and a sample 5 has a large surface-electrical-resistance value, the charge damping time of the sample 4 was also long, and the static electricity generating prevention function was inadequate [ the sample ].

[0053] Furthermore, the sample 6 had a little much L-LDPE of an interlayer, conversely, since a sample 7 had a little little L-LDPE, the sample 6 had peel strength lower than proper reinforcement, and the sample 7 was high.

[0054] Moreover, the sample 8 had a low glass transition temperature of the used polyester resin, the sample 9 is formed by resin a heat sealant layer and affiliated in a biaxial-stretching resin layer, and generating of blocking was seen, respectively.

[0055] Furthermore, the total light transmission of the sample 10 was inadequate, and its transparency was [ whenever / haze ] low.

[0056]

[Effect of the Invention] As explained in full detail above, the heat sealant layer which constitutes lid material according to this invention It is the layer in which the conductive impalpable powder which uses a barium sulfate as base resin was distributed by the thermoplastics which is polyester resin. Blocking is prevented even if lid material is made into a reel condition, since this heat sealant layer does not produce the biaxial-stretching resin layer and blocking which consist of resin other than polyester resin. And while lid material holds transparency by this heat sealant layer, it has a good antistatic property. Moreover, the

interlayer who adjoins a heat sealant layer and is located between a biaxial-stretching resin layer and a heat sealant layer A consistency 0.915 - 0.940 g/cm<sup>3</sup> 30 - 70 % of the weight of ethylene-alpha olefin copolymers, Since it is formed with the resin constituent which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers, The exfoliation between the layers of an interlayer and a heat sealant layer in case lid material is exfoliated, Or while the exfoliation by the cohesive failure inside a heat sealant layer arose and this had maintained the adhesive property with a high heat sealant layer, good detachability can be acquired and a setup of the thermal melting arrival conditions to the container made of synthetic resin of lid material becomes easy.

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[Translation done.]

\* NOTICES \*

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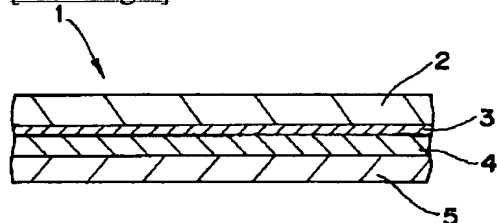
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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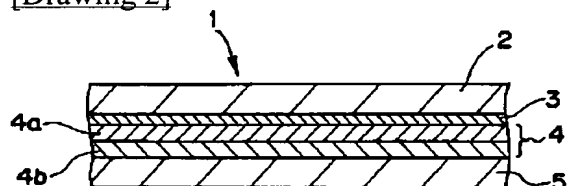
DRAWINGS

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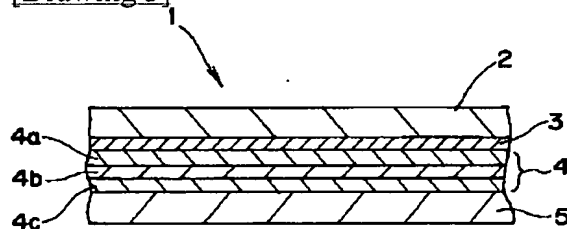
[Drawing 1]



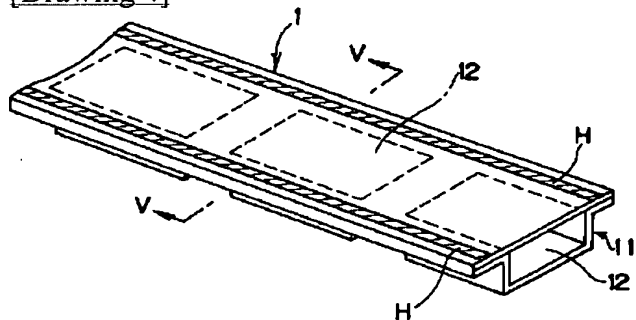
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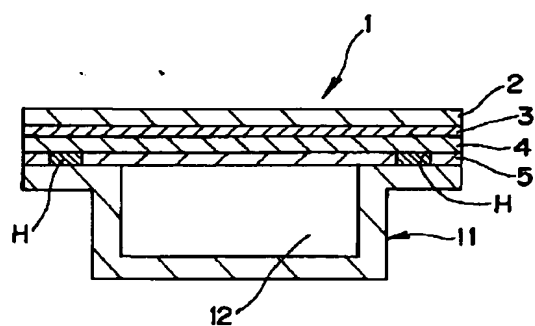
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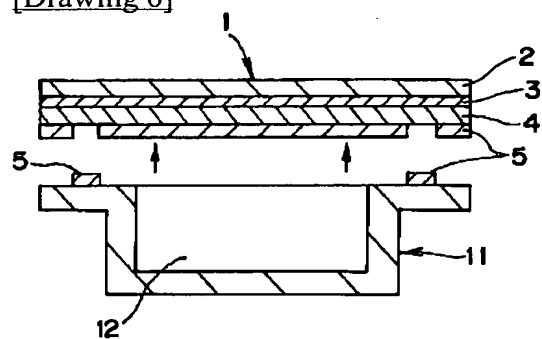
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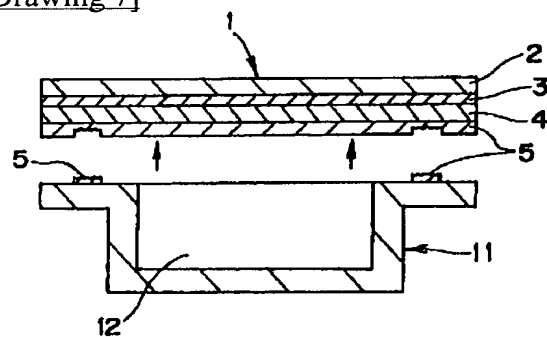
[Drawing 5]



[Drawing 6]



[Drawing 7]



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[Translation done.]